Abstract

Measurement of Digital Pressure for Autogenous Brachio-Cephalic Fistula (BCF) Utilizing the Photoplethysmography (PPG)

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Background:
Brachio-cephalic fistula (BCF) is a common vascular access for hemodialysis, however the effects of fistula creation on distal limb circulation and perfusion have not been studied well.

Objectives:
To measure digital perfusion pressure in patients undergoing brachio-cephalic fistula (BCF) creation, before and after the operation and during follow up visit. It is a pilot study to observe the changes in digital perfusion pressure in patients undergoing fistula creation at the Vascular Unit, Department of Surgery, Hospital Kuala Lumpur.

Methods:
A prospective, cross-sectional study was conducted in patients who underwent BCF creation at the Vascular Unit, Department of General Surgery, Hospital Kuala Lumpur from 1st of May 2010 to 30th of October 2010. Photoplethysmography (PPG) reading of the finger was done pre operatively, post- operatively and during follow up. The finger pressures were recorded and Digital Brachial index was calculated. Symptoms of steal syndrome was enquired during post op and follow up.

Results:
Forty patients were recruited throughout the study period. Sixteen were male (40%) and 24 were female (60%).There was a significant drop of pressure after the BCF creation ($p< 0.001$). However, none of the patients developed steal syndrome. Factors like age, gender, race and diabetic status did not significantly affect PPG reading.

Conclusion:
BCF creation causes significant drop in the finger pressure after its creation but it did not cause significant clinical finding. Factors like age, race, gender and diabetic status does not play significant role in the pressure drop in our study.

Keywords:
Autogenous Brachio-cephalic fisula, Photoplethysmograph (PPG), steal syndrome.